Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: 171006 **Date: 03-12-2013**

Subject Name: Biomedical Instrumentation

Time: 10:30 TO 01:00 **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	(a)	Explain the origin of biomedical signals in detail.	07
	(b)	Explain the difference among action, resting and bioelectric potential.	07
Q.2	(a)	Define transducers? Differentiate between active and passive transducers.	07
	(b)	Define man instrument system. Describe the components of man instrument system.	07
		OR	
	(b)	Define biometrics. Explain the physiological system of body.	07
Q.3	(a)	What are electrodes? What is their significance? Explain the various types of electrodes used.	07
	(b)	Explain the various techniques used for blood pressure measurement.	07
		OR	
Q.3	(a)	List the various types of electrodes used in EMG.	07
	(b)	Explain the functioning of heart and cardiovascular system in detail.	07
Q.4	(a)	Write a short note on (i) Plethymography (ii) Colour Doppler effects.	07
	(b)	Draw and explain the schematic diagram of an EEG machine.	07
		OR	
Q.4	(a)	What is ECG? Draw its block diagram and explain its working.	07
	(b)	How programmable pacemaker different from ordinary one? How pacemaker is implanted inside the human body.	07
Q.5	(a)	What is X-RAY? How it is different from CT scan?	07
	(b)	Draw and explain the various components of biotelemetry system.	07
		OR	
Q.5	(a)	Draw and explain the block diagram of patient monitoring system.	07
	(b)	Describe (i) MRI (ii) Pulse rate measurement	07

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